

2007 Manual

Michigan Envirothon

Your Guide to Participating in the Michigan Envirothon



Michigan Envirothon
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The Michigan Envirothon program is offered by the Michigan Association of Conservation Districts and the seventy-nine Conservation Districts of Michigan in conjunction with the following Envirothon partners and sponsors:

Michigan Department of Agriculture
 USDA Natural Resources Conservation Service
 Michigan Department of Natural Resources
 Michigan Department of Environmental Quality
 Consumers Energy & Consumers Energy Foundation
 International Paper Foundation
 Greenstone Farm Credit Services
 Canon USA, Inc.
 Olivet College

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Welcome to the Michigan Envirothon!

Envirothon is an exciting and challenging way for high school students, and their adult advisors, to learn about natural resources. Michigan Envirothon is designed to foster critical thinking, wise stewardship and community involvement.

The purpose of Envirothon is to provide environmental education to high school students and their adult advisors throughout the state of Michigan. Teams of five students with up to four alternate members study seven different subject areas throughout the year, in preparation for a statewide competition held annually. The teams are also required to complete a Community Outreach Project as part of the competition. The Michigan Envirothon program presents environmental education in a unique, motivating and exciting way! The program emphasizes hands-on learning in the outdoors; field trips and one-on-one training with resource professionals is highly encouraged. Learning objectives are set forth for each of the subject areas, and resource professionals aid in preparing resource materials for teams to use in their studies. In the Community Outreach Project portion of the Envirothon, teams identify an environmental issue in their community and then address that issue through hands-on problem solving and community education. Teams are encouraged to partner with resource agencies, local government, their schools and others to develop a strong and effective project.

The Envirothon Challenge While studying the Envirothon subject areas and completing the Community Outreach Project, along with learning a lot, teams are preparing for the statewide natural resource competition. Regional trainings are held in the spring during one day to prepare and qualify teams for the two-day State Competition, which occurs in May. At the State Competition, teams receive outdoor training with Resource Professionals. On the second day of the event, teams are tested in each subject area at four to five outdoor eco-stations. Teams are also required to complete a written summary on their Community Outreach Project and give an oral presentation to a panel of judges. Test and Project scores are combined to determine an overall winning team. Teams are recognized for excellence in each subject area, and for their Community Outreach Project. Winning teams are awarded with scholarships, plaques, ribbons, and other prizes. The First Place overall team goes on to represent Michigan at the Canon Envirothon, North America's largest high school environmental education competition, a five-day event held in the summer involving 44 States and 8 Canadian Provinces.

Michigan Envirothon Goals and Objectives

- To cultivate in high school students a desire to learn about our natural resources.
- To develop a greater appreciation for our reliance upon the natural environment.
- To provide students with an experience in environmental activities to enable them to become environmentally-aware adults.
- To develop the student's knowledge of the effects individual actions can have on the environment.
- To explore the interactions and interdependencies of our environment.
- To make students aware of local resource organizations/agencies available to assist them with environmental matters.

Envirothon Timeline and Checklist

- ☐ Sept. - Dec. 2006 **Form a team:** Michigan Envirothon teams may be comprised of up to nine students (five team members and up to four alternate members). Teams may be formed by school districts, home school groups, career centers, Girl/Boy Scout groups, FFA, 4-H, church groups and/or environmental clubs. Team advisors are not required to have any special training; they just need to be an adult interested in working with the students and helping them prepare for competition. Assistance is often available through the local Conservation District (see www.macd.org/macdcds.html for a directory) and other groups.
- ☐ Sept. - Dec. 1, 2006 **Register with the Michigan Envirothon office:** There is a registration fee of \$100 per team. Registration fees cover resource materials and the Regional Envirothon competition. The earlier a team is registered, the more time they will have to study the learning objectives and work on their Community Outreach Projects. The Team Registration Form is found on Page 21 of this manual.
- ☐ Sept. 2006 - Feb. 2007 **Choose a Community Outreach Project:** Guidelines for the Community Outreach Projects, including Scoring Criteria, begin on Page 5.
- ☐ Dec. 2, 2006 through February 1, 2007 **Late Registration:** Teams can register late, though this is not encouraged, by paying an additional \$20 late fee.
- ☐ February 28, 2007 **Release/Health Forms:** Release/Health Forms must be on file at the Michigan Envirothon office before students and advisors can participate in any Envirothon event. The Release/Health Form is found on Page 20 of this manual.
- ☐ March 2007 **Regional Envirothon:** Attendance at the Regional Envirothon is required to become eligible for the State Competition. Regional Envirothon may serve as an elimination round to advance teams to the State level, you will be notified in advance if this is the case. Regional Envirothon dates and locations are usually announced in November.
- ☐ April 20, 2007 **Written Summaries for Community Outreach Projects Due:** One point per day will be deducted for late reports.
- ☐ May 3-4, 2007 **Michigan Envirothon State Competition:** The 2007 Michigan Envirothon State Competition will be held at [YWCA Camp Cavell](#) in Lexington, Michigan, on the shore of Lake Huron.
- ☐ July 29-Aug. 4, 2007 **Canon Envirothon:** The 2007 Canon Envirothon will be hosted at Hobart & William Smith Colleges in Geneva, New York.

Regional Michigan Envirothon

The Michigan Envirothon Steering Committee has formed six areas in the State called “Regions.” Regional Envirothon events will be considered elimination rounds if more than twenty-four teams register state-wide. If there are less than twenty-four teams registered state-wide, the Regional Envirothon is still required, but no teams will be eliminated. The Michigan Envirothon Steering Committee will determine a percentage based on the number of teams registered in each region to decide how many teams from each region will move on to the State Competition (for more information on the exact determination method, please contact the Michigan Envirothon Coordinator). Locations, dates and times for the Regional events will be available in November of 2006. Regional events are typically held in March.

Teams are expected to do the following prior to arriving at their Regional Envirothon:

- Study resource materials provided by the Michigan Envirothon and from any other sources to cover the Learning Objectives for each subject area.
- Start work on their Community Outreach Project. Each team will be required to give a brief oral presentation on their project.

The Regional Envirothon will consist of the following components:

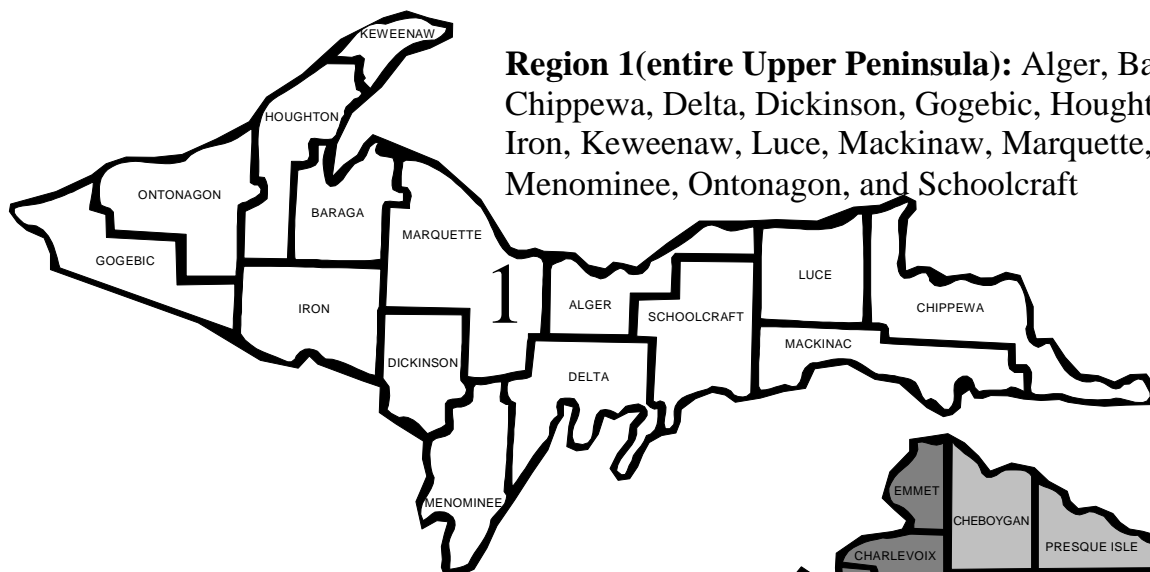
- Teaching stations covering the Envirothon subject areas.
- A test at the end of the day to determine which teams will advance to the State Competition in May (or used as practice if no teams are to be eliminated).
- Oral presentations will be given by each team concerning their Community Outreach Project; these presentations will not be scored at the Regional level.
- Training sessions will be held outside when weather permits, and hands-on activities will be preferred over lecture style presentations when possible. Teams should be prepared for this format of training before arriving at their Regional event (dress appropriately).

Teams are required to participate in their own area Regional Envirothon, unless otherwise approved prior to the event. Exceptions to this rule must be approved in advance by submitting a written request by February 1, 2007 stating a valid reason for wanting to participate in another Regional Envirothon. Requests will be reviewed by the Michigan Envirothon Steering Committee and will be approved or denied prior to the Regional Envirothon event.

Sample schedule of a Regional Envirothon event:

8:30 - 9:15 AM	Registration & Welcome
9:20 - 9:55 AM	Training Session 1
10:00 - 10:40 AM	Training Session 2 & five minute break
10:45 - 11:20 AM	Training Session 3
11:20 - 11:45 AM	Community Outreach Project presentations
11:45 - 12:15 PM	Lunch
12:20 - 12:55 PM	Training Session 4
1:00 - 1:35 PM	Training Session 5
1:40 - 2:15 PM	Training Session 6
2:15 - 3:30 PM	Test & Community Outreach Project presentations cont.
3:30 PM	Awards and safe travel home!

Michigan Envirothon Regions



Region 1(entire Upper Peninsula): Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinaw, Marquette, Menominee, Ontonagon, and Schoolcraft

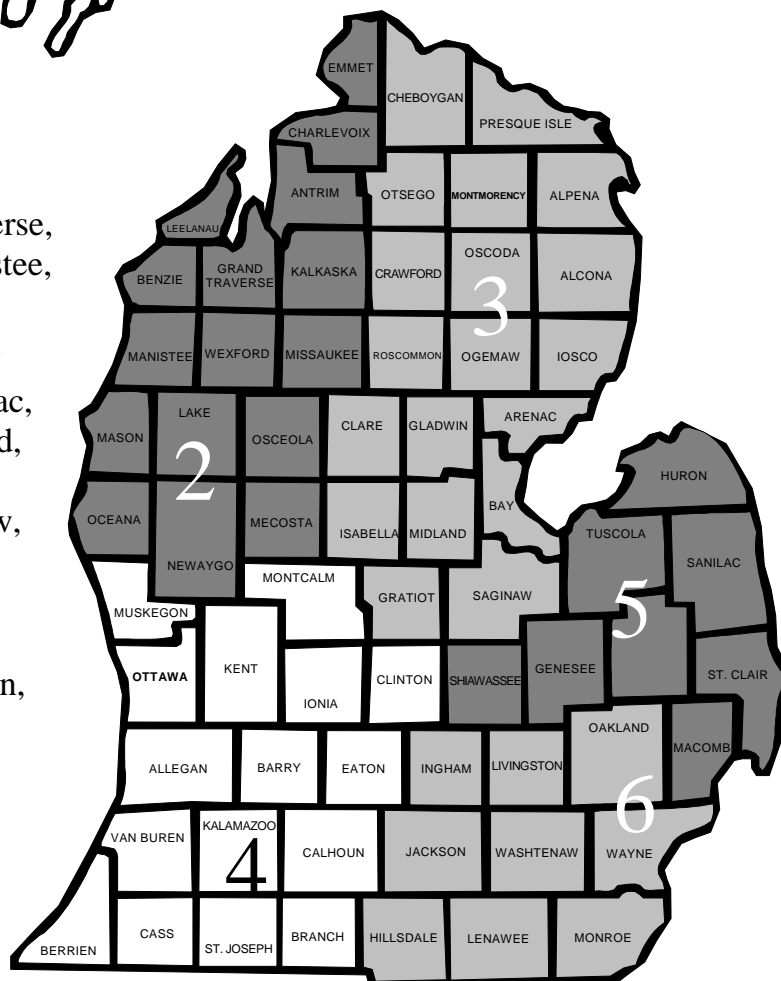
Region 2: Antrim, Benzie, Charlevoix, Emmet, Grand Traverse, Kalkaska, Lake, Leelanau, Manistee, Mason, Mecosta, Missaukee, Newaygo, Osceola, and Wexford

Region 3: Alcona, Alpena, Arenac, Bay, Cheboygan, Clare, Crawford, Gladwin, Gratiot, Iosco, Isabella, Midland, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, and Saginaw

Region 4: Allegan, Barry, Berrien, Branch, Calhoun, Cass, Clinton, Eaton, Ionia, Kalamazoo, Kent, Montcalm, Muskegon, Ottawa, St. Joseph, and Van Buren

Region 5: Genesee, Huron, Lapeer, Macomb, St. Clair, Sanilac, Shiawassee, and Tuscola

Region 6: Hillsdale, Ingham, Jackson, Lenawee, Livingston, Monroe, Oakland, Washtenaw and Wayne



Michigan Envirothon - Community Outreach Project

Overview

Michigan Envirothon teams must undertake a Community Outreach Project to address an environmental/natural resource issue in their community. Students must identify an issue they feel is a priority in their community, and then develop a project to address that issue. In this component of the competition, which makes Michigan unique among the other state/provincial Envirothon programs, students develop their own environmental empowerment model for their future involvement in environmental issues. Team projects are judged in both the written and oral presentation formats, by a panel of selected judges, and account for 20-25% of the overall State Competition score.

The Task

Identify an environmental project that your team can design and implement to make a positive environmental impact in your local area. That impact can be made through community education, hands-on problem solving, other creative methods you design, or often a mixture of all of these. Your team should design a project that includes as much community involvement and awareness as possible on a specific environmental issue such as; drinking/surface water quality, scrap tire disposal, wildlife habitat, farmland preservation, waste management, etc. Utilize creative methods for financing and completing the work involved with your project. The project does not need to be completely finished before the Envirothon State Competition, but you should have a timetable for the completion of the project. All submissions must include some project work to be eligible for judging. Projects may be used for two consecutive years by one team, but any projects lasting longer than two years will not be considered for submission in the competition. A school or group that has multiple teams may use the same project, but each team must submit separate written summaries and give separate oral presentations. In this situation, it is recommended that each team focuses on a different aspect of the project.

Step One: Selecting an Issue

1. Make a list of environmental issues that have an impact in your community that your team would like to and be able to address. Pick a few possibilities, if necessary, and explore the issues a little further.
2. Brainstorm for projects that could address the issues. If the possible projects for a particular issue seem unrealistic considering your goals, you may decide to address another issue.
3. Decide on an issue based on the goal of the projects, and on the criteria listed throughout pages 5-11 of this manual. You should have community impact while addressing the issue.

Step Two: Issue Investigation

1. Investigate by using all means possible including: materials provided by Envirothon, your team advisor and/or your local Conservation District, books/magazines/newspapers, Internet resources (make sure they're valid), written data on your county/city, etc.
2. Meet with and interview experts on the topic in your community from agencies/groups such as your local Conservation District, your local government, Michigan Departments of Agriculture, Natural Resources, and Environmental Quality, USDA Natural Resources Conservation Service and many others.

Michigan Envirothon - Community Outreach Project (cont.)

3. Meet with and interview local residents who are directly impacted by the issue. A survey or questionnaire can give you some statistics to use in your investigation.

Step Three: Issue Refinement

1. Decide which of your project ideas is the best method for addressing the issue. Consider these questions: Who is the audience? What do you hope the audience will learn/gain from your project? Can you measure the results and how?

Step Four: Details

1. Decide what resources you need to complete the project, including if you need assistance from other groups and outside financial support.
2. Decide how you are going to measure and document the impact your project has had on the environment, the knowledge of your audience, or both.
3. Outline a plan for writing your project summary, and for the oral presentation(s) you will give. Know what you need to complete the summary and presentation as you move along with your project. This prep-work may make things much easier for your team when you begin to prepare for the State Competition.

Step Five: Project Implementation

1. Secure the necessary partnerships and/or sponsorships for implementing your project. Acquire all the materials needed and begin implementing your project. Gather documentation of your work such as photographs, videotapes, letters of support/agreement, written data, etc. to include with your project display and/or for visual aids.
2. Notify your local media that you have developed a Community Outreach Project as a component of your participation in the Michigan Envirothon. Provide details of the issue, project goals and implementation work. Don't forget to recognize your partners, sponsors, and any other groups and individuals that have provided assistance.

Step Six: Project Evaluation

1. Evaluate your project by considering these questions: Were the project goals met? What did your team members learn by working on the project? Would you continue or expand the project if possible? and What did your community learn/gain from the project?

Other items that Judges will look for:

- Innovative projects.
- Creative solutions to community problems.
- Community involvement in the project. For example: surveys of residents, inviting residents to participate in the project, newspaper articles and involvement of environmental/natural resource agencies and/or groups.
- Solutions (realized or potential) to the problem.
- Written summaries and oral presentations that follow the outline of the judges scoring sheets.
- Proper grammar/spelling, neatness and formatting.
- Timelines that include a target date for the completion of your project.

Michigan Envirothon - Community Outreach Project (cont.)

Innovative projects from past Envirothon competitions:

- Establishment of a Brownfield Development Authority.
- Urban roof-top garden.
- Mercury education and collection.
- Solid waste education for teachers.
- Non-native/invasive species education.

Written Summary – Description and Directions:

Requirements: Typed using double-spaced paragraph and 12 pt. font, maximum 2 pages (or one sheet front & back). 8 ½" x 11" sheet size only. Please note that written summaries submitted for the State Competition will not be returned.

Your summary should include the following information:

- Demonstrate a need for the project. What is the environmental issue and how/why is it impacting the environment and your community?
- Explain how you decided to focus your project, and what tasks were included in your project. Were there other options to address the environmental issue, and if so, why did you choose the option you did?
- List and describe any partners you had in the project.
- List any costs associated with implementing your project (time, money, materials, equipment). How were those costs covered?
- Describe the results of your project. Results can be realized or anticipated (please make sure to clarify the difference).
- Describe how the project was publicized.
- Describe the community's acceptance of your project and feedback that you received from the community. Will your project have a long-term impact on the community or are there plans to continue your project within the community?
- List and describe any other aspects of your project that you feel will give the judges a better understanding of your project prior to your oral presentation.

References/Bibliography (not included in the 2 page total above):

- On a separate page(s), list resources and references used for your project. For example, the references you use may be technical references, fact sheets, interviews with Resource Professionals, and/or may include the references provided by Michigan Envirothon in your team's Resource Packet.

Written Summary and List of References/Bibliography are due to the Michigan Envirothon office by Friday, April 20, 2007. One point per day will be taken off for late submissions, any submissions received after April 29, 2007 will receive zero out of five points possible (see score sheet). You may also e-mail your summary and list of references/bibliography; please contact the Michigan Envirothon Coordinator prior to doing this to make proper arrangements. Project judges will be reading this summary prior to your oral presentation.



Michigan Envirothon Community Outreach Project

Judges' Scoring Sheet for Written Summary & List of References

Scale for Scoring

0	Not at all
1	Poor or Poorly
2	Fair or Slightly Well
3	Good or Fairly Well
4	Excellent or Very Well
5	Outstanding

Team Number:

Final Score:

Judge Number:

Written Summary and List of References/Bibliography	Circle Score
A. Team addressed/identified a specific environmental problem and related issues	0 1 2 3 4 5
B. Team demonstrated how/why the issue is important to the environment and the community	0 1 2 3 4 5
C. Organization of Subject Matter	
• Written summary was well organized and easy to follow	0 1 2 3 4 5
• Award three points if Written Summary is 2 pages or less (award zero points if Written Summary is longer than 2 pages)	0 3
D. Subject Matter	
• Team presented a viable and reasonable solution, or steps to reaching a viable solution, to the problem(s) that the environmental issue caused	0 1 2 3 4 5
• Team took appropriate actions to implement the project	0 1 2 3 4 5
• Team considered the interested/affected groups when deciding on the project tasks, and partnered with those groups appropriately	0 1 2 3 4 5
• Teams described project costs (time, money, materials, equipment, etc.), if any, and how those costs were covered	0 1 2 3 4 5
• Team presented a list of results realized and/or anticipated results	0 1 2 3 4 5
• Team described how the project was publicized	0 1 2 3 4 5
• Team discussed community acceptance/feedback of the project, long-term impacts, and future activities	0 1 2 3 4 5
E. Award two points if List of References/Bibliography was provided (award zero points if List of References/Bibliography was missing)	0 2
F. Award five points if Written Summary was submitted by the April 20, 2007, deadline (determined by Michigan Envirothon office)	0 1 2 3 4 5
Final Score (60 points maximum)	

Michigan Envirothon - Community Outreach Project (cont.)

Rules for the Oral Presentations:

1. Only students of the five member team are allowed to participate in the oral presentation. Alternative members are not allowed to participate in the presentation but they may watch as long as they do not speak or otherwise interrupt the presentation or question & answer portion.
2. Advisors are allowed to watch their team's presentation, but they may not speak or otherwise interrupt the presentation or question & answer portion.
3. Audio/visual equipment (such as laptops & projectors for PowerPoint presentations) may be used during the oral presentations. Any requests for the use of audio/visual equipment must be made to the Michigan Envirothon office no later than April 20, 2007. If a team is using audio/visual equipment, they must meet with the audio/visual coordinator prior to their presentation time.
4. Upon introducing themselves, teams will have ten minutes to give their presentation; introduction of the team and individual team members will not count as part of the ten minute presentation. A presentation timer/monitor will be in the room keeping time and teams will be asked to stop their presentation at ten minutes if they have not already. Judges will have five minutes to ask the team questions after the presentation, teams will then be excused and the judges will have five minutes to score the presentation before the next team arrives.
5. Students will be standing (unless they cannot due to physical disability or injury) while they give their presentation, while a panel of four to five judges will be seated in front of them.

Suggestions for Developing Successful Oral Presentations:

- Reference the judges scoring sheet provided for the oral presentation (given on pages 10 & 11 of this manual) while developing your presentation.
- Have all team members participate in the presentation.
- Practice, practice, practice! Teams can practice giving their presentation to classmates, the local Conservation District Board members, the school board, or anywhere else they can find an audience. Teams typically feel more comfortable while presenting to the Envirothon judges if they have practiced their presentation in front of other groups.

Displays:

Community Outreach Project displays are not required, but they are strongly encouraged. Project displays allow other Envirothon teams and the many volunteers present to learn about all of the projects and the great things that are being done by Envirothon teams in communities throughout Michigan. Displays may also be useful to teams while making their oral presentation, if the display is referenced during the presentation. If the display is made to set on a table, it should be able to fit onto a 6 foot tabletop. Though no points will be awarded for displays as part of the Envirothon competition, a People's Choice Award will be conducted and a prize will be awarded to all team members on the team with the chosen display.



Michigan Envirothon Community Outreach Project

Judges' Scoring Sheet for Oral Presentations

Scale for Scoring

0	Not at all
1 or 2	Poor or Poorly
2 or 4	Fair or Slightly Well
3 or 6	Good or Fairly Well
4 or 8	Excellent or Very Well
5 or 10	Outstanding

Team Number:

Oral Presentation Score:

Judge Number:

Part I: Introduction (30 points maximum)	Circle Score
A. Team addressed/identified specific environmental problem and related issues	0 1 2 3 4 5
B. Team demonstrated how/why the issue is important to the environment	0 2 4 6 8 10
C. Team demonstrated how/why the issue is important to the community	0 2 4 6 8 10
D. Team identified interested/affected groups	0 1 2 3 4 5
Part I Subtotal:	

Part II: Subject Matter (70 points maximum)	Circle Score
A. Organization of Subject Matter	
• Overall organization of the presentation	0 1 2 3 4 5
• Flow of information (introduction, body, conclusion)	0 1 2 3 4 5
B. Importance of Problems and Practices	
• Team demonstrated an understanding of the environmental, social, economic, and political issues impacting the community regarding the identified environmental issue	0 2 4 6 8 10
• Team presented a viable and reasonable solution, or steps to reaching a viable solution, to the problem(s) that the environmental issue caused	0 2 4 6 8 10
• Team considered the interested/affected groups when deciding on the project tasks, and partnered with those groups appropriately.	0 1 2 3 4 5
• Team took appropriate actions to implement the project	0 1 2 3 4 5
• Team measured, or will measure, the results of the project	0 1 2 3 4 5
Continued on the next page . . .	

Part II: Subject Matter (continued)						
C. Conclusion						
• Team presented a clear and concise summary in their conclusion	0	1	2	3	4	5
• Team discussed community acceptance/feedback of the project	0	2	4	6	8	10
• Team presented a list of results realized and/or anticipated results	0	2	4	6	8	10
Part II Total:						

Part III: Presentation (40 points maximum)					Circle Score				
A. Overall Presentation: Team members demonstrated effective public speaking skills									
• Team members used eye contact and appropriate gestures				0	1	2	3	4	5
• Team members incorporated originality and creativity into the presentation				0	1	2	3	4	5
B. Presentation Time: Team made effective use of their time									
• Add up to five points if the presentation was accomplished in the allotted time scale and the team made effective use of their time. (Time scale is 7-10 minutes.)				0	1	2	3	4	5
5 pts.: 7-10 minutes	4 pts.: 5-6 minutes	3 pts.: 3-4 minutes	2 pts.: 0-2 minutes	1 pt.: More than 10 minutes					
C. Award Two points for each team member verbally participating in the presentation (all students demonstrated speaking skills)				0	2	4	6	8	10
D. All team members demonstrated thorough knowledge of the environmental issue and the project				0	1	2	3	4	5
E. Questions were answered logically and concisely by all *Judges are encouraged to ask specific questions of individual team members				0	2	4	6	8	10
Part III Total:									

Final Score	
Total Points for Part I (30 maximum)	
Total Points for Part II (70 maximum)	
Total Points for Part III (40 maximum)	
Total Points for Written Summary & List of References (60 maximum)	
Final Score (200 points maximum)	

Michigan Envirothon Rules & Regulations (Amended March 2005)

1. Team members must be enrolled in grades 9-12 during the school year of the competition. Teams will consist of five members. At least three team members must be in attendance at the State Competition for the team to be eligible to compete. Please note that only 5 member teams will be eligible to compete in the Canon Envirothon.
2. Alternate team members may substitute for regular team members in the Regional or State Envirothon if the alternate is properly registered. Alternates may attend the competition for the experience. (Please note, if an alternate does attend they cannot go with their team during testing or participate in the Community Outreach Project oral presentation)
3. Teams must be accompanied to all Envirothon events by an adult advisor. One advisor must be present for every five students at the Michigan Envirothon State Competition. Teams with mixed sexes will need one male and one female advisor. If teams fail to meet this requirement the team will be disqualified. Advisors will be responsible to assure that teams display proper conduct during all Envirothon sponsored events.
4. To compete in the State Envirothon, teams must qualify at their regional competition.
5. Team members are not to use or possess any electronic recording devices, such as tape recorders, video cameras, cellular phones, or computers during competition. Calculators are permitted.
6. All scores are final the day of competition.
7. Transportation, lodging and meals will be the responsibility of the participants, unless noted otherwise.
8. Snuff, tobacco, drugs (except for those that are prescribed and listed on the Envirothon Release/Health Form) and alcohol are prohibited during all Envirothon sponsored events.
9. Release/Health forms must be submitted to the Envirothon office by February 28th. Teams without all of their participants' health forms submitted to the Envirothon office by February 28th will not be allowed to participate in the Envirothon competition.
10. Registration refunds will not be made after March 1st. Partial refunds may be granted to teams who submit written notice of withdrawal by March 1st.
11. The team with the highest cumulative point total will win the competition event. Tie breaker procedure will be determined prior to each Envirothon competition.
12. The use of identification keys is prohibited during competition events unless provided by the Envirothon Resource Professionals.
13. A Grievance Committee has been established to hear complaints. If team members, advisors, or others wish to make a grievance or complaint (e.g. violation of rules, cheating, event procedures, etc.) during competition, this must be done as soon as possible following the incident and before the winners are announced. Complaints may be made to group or station leaders, and they will report back to the Grievance Committee. Group or station leaders may ask the team member or advisor to make their complaint or grievance in writing.
14. Awards for the state and regional competitions will vary from year to year. A list of awards will be available prior to the competition.
15. Envirothon rules and regulations are subject to change. Revisions will be sent in writing to team advisors prior to competition.
16. Any suggestions for program improvements need to be put in writing and submitted to the Envirothon office. These suggestions will be addressed within thirty working days from the date they are received.
17. The written project summary is due April 20, 2007. One point per day will be taken off for late papers. Projects may only be used by a team for two consecutive years. Projects conducted for more than two consecutive years will not be accepted.

Canon Envirothon Mission Statement and Goals & Objectives

Mission Statement

The mission of the Canon Envirothon is to develop knowledgeable, skilled and dedicated citizens who are willing to work towards achieving and maintaining a natural balance between the quality of life and the quality of the environment. This is accomplished by developing in young people an understanding of the principles and practices of resource management and ecology and through practice dealing with complex resource management decisions. The Canon Envirothon program fosters a working partnership with resource professionals and the general public to promote goals of environmental education in grades 9-12 and recognizing students who achieve excellence in environmental and natural resource knowledge and skills.

Goals and Objectives

Goal 1:

To promote a desire to learn more about the natural environment and develop knowledge and skills to apply the basic principles and practices of resource management and ecology.

Objectives:

- a. Basic knowledge and awareness.
- b. Analysis skills and resource management.

Goal 2:

To promote stewardship of natural resources and develop critical thinking skills, cooperative problem-solving skills, and decision making skills of students to balance the quality of life and the quality of the environment.

Objectives:

- a. Identification of environmental problems.
- b. Issue investigation.
- c. Comprehension of different points of view.
- d. Ability to generate alternative solutions.
- e. Evaluation of personal positions.
- f. Ability to think ahead.
- g. Ability to communicate.

Goal 3:

To provide students with experience in environmentally oriented activities to enable them to become environmentally aware, action oriented citizens.

Objectives:

- a. Knowledge of strategies used in environmental/natural resource management.
- b. Working with resource management agencies and organizations.
- c. Evaluating the effect of personal actions.
- d. Ability to work along and with others to solve environmental problems.

To learn more about the Canon Envirothon, visit their website at www.envirothon.org

Michigan Envirothon Learning Objectives

The learning objectives set forth by the Michigan Envirothon are those concepts and skills that the Envirothon teams will be tested in. Resource materials and training with Resource Professionals provided by the Michigan Envirothon are intended to cover the learning objectives. Teams are encouraged to search for additional resources which may also address these objectives. Teams are also encouraged to request training from local Resource Professionals in an effort to address the learning objectives.

Aquatic Ecology

1. Identify the processes and phases for each part of the water cycle.
2. Describe the chemical and physical properties of water and explain their importance for freshwater and saltwater ecosystems.
3. Discuss methods of conserving water and reducing point and non-point source pollution.
4. Analyze the interaction of competing uses of water supply: hydropower, navigation, wildlife, recreation, waste assimilation, irrigation, industry and others.
5. Identify common aquatic organisms through the use of the key.
6. Delineate the watershed boundary for a small water body.
7. Be able to explain the different types of aquifers and how each type relates to water quality and quantity.
8. Briefly describe the benefits of wetlands, both their function and value.
9. Describe the changes to the aquatic ecosystem based on alteration to the aquatic habitat.
10. Know methods used to assess and manage aquatic environments and utilize water quality information to assess the general water quality of a given body of water (includes sampling techniques & water quality parameters used to monitor point and non-point source pollution).
11. Be familiar with major methods and laws used to protect water quality (surface and ground water) and utilize this information to make management decisions to improve the quality of water in a given situation.

Energy

1. Energy is an essential human need we obtain from our natural resources. What is energy? What are our needs for energy? Understand the different sources of energy - sun, coal, oil, gas, hydro, geothermal, nuclear - and look at how supply and demand are related to our choices of energy resources.
2. Understand that energy conservation is a consequence of our choices. Become familiar with some ways to practice energy conservation - insulation, efficient products, decisions and choices.
3. Become familiar with different energy measurement terminology and basic terms when talking about energy.
4. Learn about "alternative energy" - solar, biomass, geothermal, wind, etc.
5. Understand the different energy requirements for different types of transportation - cars, trucks, buses, airplanes, trains, boats, etc.
6. Identify and study current issues concerning energy production, uses, etc.

Learning Objectives (continued)

Forestry

1. Identify common trees without a key and identify specific or unusual species of trees or shrubs through the use of a key.
2. Understand forest ecology concepts and factors affecting them, including the relationship between soil and forest types, tree communities, regeneration, competition, disturbance and succession.
3. Understand the cause/effect relationship of factors affecting tree growth and forest development (climate, insects, soils, microorganisms, etc.).
4. Understand how wildlife habitat relates to forest communities, forest species, forest age structure, snags and den trees, availability of food, and riparian zones.
5. Understand the value of trees in urban and suburban settings and factors affecting their health and survival.
6. Understand how the following issues are affected by forest health and management: biological diversity, forest fragmentation, air quality, rural development, fire and recreation.
7. Understand basic forest management concepts and tools such as: how various silvicultural practices are utilized, the use of tree measuring devices, use of technology, and best management practices.
8. Identify complex factors which influence forest management decisions (economical, social, ecological and urban interface).
9. Apply silviculture concepts and methods to develop general management recommendations for a particular situation and management goals.

Soils/Geology

1. Recognize soil as an important resource.
2. Describe basic soil properties and formation factors.
3. Understand soil drainage classes and know how wetlands are defined.
4. Determine basic soil properties and limitations, such as mottling and permeability, by observing a soil pit or soil profile.
5. Identify types of soil erosion and discuss methods for reducing erosion.
6. Utilize soil information, including soil surveys, in land use planning.
7. Discuss how soil is a factor in, or impacted by, non-point source pollution.

Sustainable Agriculture

1. Look at food and fiber production in Michigan and obtain an understanding of the essential human needs we obtain from our natural resources.
2. Understand the importance of agriculture in Michigan as a major land use.
3. Look at land use trends, the importance of agricultural lands to other natural components of Michigan, and look at the impact of land use policies on land use for agriculture.
4. Understand the basic glossary of agricultural terms and agricultural land use practices.
5. Look at the trend in agriculture - how we got to where we are today - small farms to industrial farming to a sustainable agriculture movement.
6. Sustainable agriculture relies upon four parts. Understand these four parts: a) agricultural product profitability, b) agricultural practices compatible with the environment, c) energy efficiency in agricultural practices, and d) a system which is supportive of rural and urban communities.
7. Understand examples of sustainable agriculture practices and methods: maintenance and improvement of soil / prevention of erosion, rotational grazing, composting, crop rotation, manure spreading, organic farming, cover crop use, integrated pest management, and value-added production.

Learning Objectives (continued)

Wildlife

1. Identify common wildlife species and wildlife signs (keys will be used for more extensive identification).
2. Identify basic wildlife survival needs.
3. Describe specific adaptations of wildlife to their environment and role in the ecosystem.
4. Describe predator/prey relationships and examples.
5. Describe the potential impact of the introduction of non-native species.
6. Describe the major factors affecting threatened and endangered species and methods used to improve the populations of these species.
7. Describe ways that habitat can be improved upon for specific species by knowing their requirements.
8. Discuss the concepts of carrying capacity and limiting factors.
9. Discuss various ways the public and wildlife managers can help in the protection, conservation, management, and enhancement of wildlife populations.
10. Describe food chains/webs and cite examples.
11. Describe factors that limit or enhance population growth.
12. Evaluate a given habitat for its suitability for designated species, give a description of their habitat needs.

2007 Canon Envirothon Environmental Issue: Alternative Energy

RATIONALE

Decisions about the production and use of energy are critical issues of environmental, economic and social policies and of individual choice. Decisions about sources and uses of energy are made not only in the halls of national and local governments, and in corporate boardrooms, but in private homes and individual minds. The environmental, economic and social outcomes of these choices will shape the future of our nation and our planet.

Efficient use of energy generated from traditional sources and the development of renewable energy resources are two aspects of energy policy currently the focus of extensive research by state and federal government agencies, academic institutions and private companies. The fund of knowledge is great, continues to grow, and offers a wealth of resources for an Envirothon competition.

The present generation of high school students will be asked to make difficult decisions about energy both in matters of public environmental and economic policy and in matters of personal choices. Providing a structure and materials for intensive investigation into energy resources and alternatives would be a service to those students and their schools.

Sustainable, renewable energy is a crucial and intrinsic element of sustainable development. Until energy needs are met by affordable, environmentally sound means, sustainable development efforts will be greatly hampered.

2007 Canon Envirothon Environmental Issue: Alternative Energy (cont.)

LOCALE

Hobart and William Smith Colleges in Geneva, New York, site of the 2007 [Canon Envirothon](#), is uniquely situated to offer access to sites demonstrating a wide variety of energy resources and uses. Within less than an hour's drive from Geneva, electrical energy generation from small-scale hydropower, nuclear, and coal-fired plants may be found. Natural gas production can be observed in the area, as can greenhouses heated by methane produced from a landfill. Trinity Hall on the HWS campus where the 2007 Steering Committee first convened is powered by a combination of solar and geothermal energy. Cornell University's unique lake-source cooling and heating installation is also within easy range and worthy of study.

Sites targeted for intensive development of wind-source generation of electricity are part of the local landscape. Two hours away from HWS are two of the largest wind farms east of the Mississippi. Proposals for off-shore wind farms in the Cape Cod area have been under study for several years. Canada is also experiencing growth of wind-energy installations.

GOAL

Students will comprehend long term and short term environmental, [social](#), and economic considerations of energy production and usage.

ACTIVITIES

- Students will research, compare and contrast traditional and emerging energy production resources and applications; focusing on the environmental implications of such production.
- Students will relate energy systems to corresponding natural resources in New York State.
- Students will identify the organizations (and their roles) and the processes involved in making energy decisions in New York and globally.
- Students will describe the interactions among society, technology, and use of energy sources.
- Students will identify technologies created as a result of society's concern for dwindling non-renewable energy resources (e.g., electric cars, biodiesel).

OUTCOMES

Students will be able to evaluate appropriate energy resource choices for a specific application.

2007 Canon Envirothon Environmental Issue: Learning Objectives

UNDERSTANDINGS AND TOPICS OF INVESTIGATION: TASKS

I. Traditional energy uses and production

1. Identify and understand the traditional sources of energy generation of:
 - A. Electricity
 1. hydropower
 2. fossil fuel
 3. nuclear energy
 - B. Natural gas
 - C. Fossil fuels (vehicles)
2. Assess environmental impacts of the above sources in regards to:
 - A. Consumption of resources
 - B. By- products (emissions/ waste)
 - C. Impacts on ecosystems
3. Assess social and economic factors and implications:
 - A. Infrastructure
 - B. Environmental justice
 - C. Conservation practices
 - D. Organizations and agencies active in energy policy decision making
 - E. Design of energy distribution systems

II. Emerging energy technologies

1. Identify and understand sources and applications of renewable energy
 - A. Solar
 - B. Wind generation
 - C. Biomass
 - D. Geothermal
 - E. Hydrogen
 - F. Ocean (Tidal) generation
 - G. Ethanol/Methanol/methane
2. Assess the environmental impacts of the above sources in regards to:
 - A. Consumption of resources
 - B. By- products (emissions/ waste)
 - C. Impacts on surrounding ecosystems

2007 Canon Envirothon Environmental Issue: Learning Objectives (cont.)

3. Assess social and economic factors and implications of the above:
 - A. Infrastructure
 - B. Environmental justice
 - C. Conservation practices
 - D. Organizations and agencies active in energy policy decision making
 - E. Design of energy distribution systems

III. Energy Issues Related to other Canon Envirothon Study Areas:

1. Soils:
 - A. Identify and understand issues of traditional and innovative energy sources related to:
 1. Agricultural and forested lands
 2. Soil erosion control
2. Aquatics:
 - A. Identify and understand issues of traditional and innovative energy sources related to:
 1. Fish habitat and reproduction
 2. Changes in flow rates and water levels
 3. Biodiversity
 4. Groundwater/aquifer resources
3. Forestry:
 - A. Identify and understand issues of traditional and innovative energy sources related to:
 1. Biofuels
 2. Species diversity – plant and animal
 3. Pests and pesticides
 4. Forest management practices
4. Wildlife:
 - A. Identify and understand issues of traditional and innovative energy sources related to:
 1. Migratory bird flyways
 2. Habitat loss/degradation

Michigan Envirothon Release/Health Form

All students, advisors, and volunteers must complete this form to participate in any Michigan Envirothon event. **Please submit no later February 28, 2007**

Team Name & Advisor Name: _____

Attendees Full Name: _____ Date of Birth: _____

Home Address: _____ City: _____ Zip: _____

Home Phone: _____ Alternate Phone: _____

Emergency Contact Person: _____

Relationship to Attendee: _____ Phone Number: _____

Insurance Provider: _____ Name of Insured: _____

Group Number: _____ Policy Number: _____

Allergies (medication, food, etc.): _____

Medical Conditions (diabetes, asthma, etc.): _____

Medications currently being taken: _____

***Please place your initials in the spaces provided, stating that you agree to the following three statements:**

_____ I understand this event may be strenuous and adverse weather conditions may occur. Nevertheless, I assume the risk involved. In the event of an accident, I authorize the Michigan Envirothon to provide emergency medical attention for me during all Michigan Envirothon sanctioned events. I have been assured that all reasonable care will be taken to prevent incident, therefore, I will not hold Michigan Envirothon liable should an accident occur.

_____ I have read the rules and regulations of the Michigan Envirothon and agree to them.

_____ I give my consent to the use of any photos taken of me by officials of the Michigan Envirothon, or their representatives, to be used for editorial or promotional uses only.

Signature of Participant: _____ Date: _____

- The statement below is for use by parent/guardian of minors under the age of 18-
I, _____ (parent/guardian), give permission for my child, _____, to travel to Michigan Envirothon events in the care of _____ (team advisor) for the purpose of attending and participating in Michigan Envirothon events.

Signature of Parent/Guardian: _____ Date: _____

2007 Envirothon Team Registration/Roster Form

Registration September through December 2006 - \$100.00

PLEASE FILL OUT ALL LINES

Team Name:_____ School:_____

Team Advisor:_____ M / F E-mail:_____

Address:_____ City:_____ Zip:_____

Work Phone:_____ Fax:_____

Best time to call:_____ Home Phone:_____

Team Co-Advisor:_____ M / F E-mail:_____

Best method for contacting Co-Advisor:_____

Team Members

1._____ M / F Grade:_____

2._____ M / F Grade:_____

3._____ M / F Grade:_____

4._____ M / F Grade:_____

5._____ M / F Grade:_____

Alternate Team Members

1._____ M / F Grade:_____

2._____ M / F Grade:_____

3._____ M / F Grade:_____

4._____ M / F Grade:_____

Team Registration must be completed to later than February 1, 2007. Teams must consist of 3 to 5 students, with up to 4 alternate members, grades 9 through 12. Please note that teams with less than 5 members will not be eligible to compete at the Canon Envirothon. A \$20.00 late fee will be applied to registrations received after December 1, 2006. No refunds for team withdrawals will be granted after March 1, 2007.

Please make checks payable to: **Michigan Envirothon**

Mail completed registration form & payment to:

Attn: Teresa Salveta, Michigan Envirothon

Michigan Department of Agriculture - ESD

P.O. Box 30017 • Lansing, MI 48909

*When sending checks to the Michigan Envirothon, please write "Personal & Confidential" on the outside of the envelope. Credit cards are also accepted; please call for details.